

WHAT IS CLAIMED IS:

1. An inflatable web comprising:

5 a) two sheets having inner surfaces sealed to each other in a pattern defining a series of inflatable chambers of predetermined length, each of the chambers having at least one change in width over their length;

b) an inflation port located at a proximal end of each chamber, said inflation ports being formed by intermittent seals between said sheets;

10 and

c) longitudinal flanges formed by a portion of each of said sheets that extend beyond said inflation ports and intermittent seals.

2. The inflatable web of claim 1, wherein said chambers comprise at least two inflatable sections of relatively large width connected by relatively narrow inflatable passageways.

3. The inflatable web of claim 2, wherein said inflation ports are narrower in width than the inflatable sections of relatively large width.

4. The inflatable web of claim 1, wherein each of said sheets comprises a heat-sealable thermoplastic polymer on its inner surface.

5. The inflatable web of claim 2, wherein the sections of relatively large width are circular and capable of forming essentially spherical or hemispherical bubbles when inflated.

6. The inflatable web of claim 1, wherein said pattern defining the inflatable chambers form uninflatable planar regions between the inflatable chambers.

5 7. The inflatable web of claim 1, wherein said flanges have a width of at least $\frac{1}{4}$ inch.

8. The inflatable web of claim 1, wherein said flanges are substantially equal in width.

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9. The inflatable web of claim 1, wherein each of said inflatable chambers has a closed distal end opposite from the proximal end of each chamber.

15 10. The inflatable web of claim 1, wherein said inflation ports comprise inner surfaces that are heat sealable to one another.

11. A method of forming an inflated cushioning product, the method comprising:

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a) providing an inflatable web which comprises

(1) two sheets having inner surfaces sealed to each other in a pattern defining a series of inflatable chambers of predetermined length, each of the chambers having at least one change in width over their length,

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(2) an inflation port located at an end of each chamber, said inflation ports being formed by intermittent seals in said sheets, and

(3) longitudinal flanges formed by a portion of each of said sheets that extend beyond said inflation ports and intermittent seals;

5 b) placing an inflation nozzle between the longitudinal flanges, the nozzle comprising a gas outlet port for injection of gas into the inflatable chambers;

c) moving the web and inflation nozzle relative to each other so as to cause the inflation nozzle to move longitudinally between the flanges;

10 d) inflating the series of chambers sequentially by the introduction of a gas into their respective inflation ports; and

e) sealing the inflation port of each inflated chamber.

12. The method of claim 11, wherein

15 said web has opposing first and second longitudinal edges spaced by a predetermined distance, said longitudinal flanges located at said first longitudinal edge; and

said method further comprises effecting relative movement between said first and second longitudinal edges to decrease the distance therebetween during inflation.

20 13. The method of claim 12, wherein said first longitudinal edge is urged towards said second longitudinal edge such that a crease forms at said second longitudinal edge.

25 14. The method of claim 11, wherein said longitudinal flanges are tensioned to cause close slidable contact between said flanges and said inflation nozzle.

15. The method of claim 11, wherein said web is moved longitudinally past said inflation nozzle.

16. The method of claim 15, wherein at least a portion of said inflation
5 nozzle moves as said web moves past said nozzle.

17. The method of claim 16, wherein said inflation nozzle has a distal end that moves in response to movement of said web past said nozzle.

10 18. The method of claim 17, wherein said movement of said distal end is caused by contact between said distal end and said intermittent seals forming the inflation ports of each chamber as said web moves past said inflation nozzle.

15 19. The method of claim 11, wherein air is introduced by the inflation nozzle into the inflation ports at greater than atmospheric pressure.

20 20. The method of claim 15, wherein the inflation ports are heat sealed after inflation by moving said web through a heat sealing station positioned immediately downstream from the inflation nozzle.

21. An apparatus for inflating a web, comprising:

a) a mechanism for conveying an inflatable web along a path of travel, the web comprising

25 (1) two sheets having inner surfaces sealed to each other in a pattern defining a series of inflatable chambers of predetermined length, each of the chambers having at least one change in width over their length,

(2) an inflation port located at a proximal end of each chamber, said inflation ports being formed by intermittent seals between said sheets, and

5 (3) longitudinal flanges formed by a portion of each of said sheets that extend beyond said inflation ports and intermittent seals;

b) an inflation nozzle within said travel path and positioned for placement between the longitudinal flanges of the web, said inflation nozzle comprising a gas outlet port for injection of gas into the inflatable
10 chambers and being adapted to position said gas outlet port closely adjacent to the inflation ports and intermittent seals so that, as said conveying mechanism conveys the web along said travel path, said inflation nozzle moves longitudinally between the flanges to inflate the series of chambers sequentially by the introduction of gas into their
15 respective inflation ports; and

c) a device for sealing the inflation ports.

22. The apparatus of claim 21, wherein at least a portion of said inflation nozzle is adapted to move as said web moves past said nozzle.

23. The apparatus of claim 22, wherein said inflation nozzle comprises a distal end that includes said gas outlet port, said distal end being adapted to move in response to movement of said web past said nozzle.

24. The apparatus of claim 23, wherein said distal end of said inflation nozzle is biased towards said inflation ports and intermittent seals.

25. The apparatus of claim 24, wherein said movement of said distal end is caused by contact between said distal end and said intermittent seals as said web moves past said inflation nozzle.

5 26. The apparatus of claim 21, wherein

said web has opposing first and second longitudinal edges spaced by a predetermined distance, said longitudinal flanges located at said first longitudinal edge; and

10 said apparatus further comprises means for effecting relative movement between said first and second longitudinal edges to decrease the distance therebetween during inflation.

15 27. The apparatus of claim 26, wherein said means for effecting relative movement comprises urging said first longitudinal edge towards said second longitudinal edge such that a crease forms at said second longitudinal edge.

20 28. The apparatus of claim 27, wherein said means for effective relative movement comprises a platform positioned at an angle, relative to said second longitudinal edge, which directs said first longitudinal edge towards said second longitudinal edge as said inflatable web is conveyed along said travel path.

25 29. The apparatus of claim 28, wherein

a. said conveying mechanism includes a pair of adjacent, counter-rotatable cylinders capable of engaging and moving said inflatable web along said travel path; and

b. said pair of cylinders are mounted on said angled platform.

30. The apparatus of claim 29, wherein said inflation nozzle is positioned immediately upstream of said cylinders.

31. The apparatus of claim 21, further including a device for controlling
5 tension in said longitudinal flanges.

32. The apparatus of claim 21, wherein said sealing device is positioned immediately downstream from the inflation nozzle.

10 33. The inflatable web of claim 1, further including one or more lines of weakness that allow sections of said web to be removed.

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